

Search Coil vs. Fluxgate Magnetometer Measurements at Interplanetary Shocks

We present magnetic field observations at interplanetary shocks comparing two different sample rates showing significantly different results. Fluxgate magnetometer measurements show relatively laminar supercritical shock transitions at roughly 11 samples/s. Search coil magnetometer measurements at 1875 samples/s, however, show large amplitude ($\delta B/B$ as large as 2) fluctuations that are not resolved by the fluxgate magnetometer. We show that these fluctuations, identified as whistler mode waves, would produce a significant perturbation to the shock transition region changing the interpretation from laminar to turbulent. Thus, previous observations of supercritical interplanetary shocks classified as laminar may have been under sampled.